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REMARKS

This is a full and timely response to the non-final Official Action mailed **January 11, 2008**. Reconsideration of the application in light of the following remarks is respectfully requested.

Claim Status:

Claims 19-26 and 51-72 were withdrawn from consideration under a previous Restriction Requirement and cancelled without prejudice or disclaimer. No amendments to the application are proposed by the present paper. Thus, claims 1-18, 27-50 and 73-93 are currently pending for further action.

Claim Objections:

The recent Office Action improperly objects to the claims because claim 94 has allegedly been omitted from the listing of claims. (Action, p. 2). Had the Examiner read Applicant's previous filing, she would have found the following explanation. "In preparing the present [previous] response, Applicant discovered that claim number 83 was inadvertently omitted. [No claim was numbered as "83."] Consequently, claims 84-94 have been renumbered herein to correct this error." (Applicant's paper, filed 22 Oct. 2007, p. 15).

Consequently, the claims are now properly numbered and accounted for. There being no basis for an objection to the claims, the objection may now be reconsidered and withdrawn.

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Prior Art:

Claims 1, 2, 5-13, 27-32, 35-37, 40, 76, 81 and 93 were rejected under 35 U.S.C. § 102(e) as anticipated by U.S. Patent No. 6,440,594 to Kindler et al. ("Kindler"). For at least the following reasons, this rejection should not be sustained.

Claim 1 recites:

A device comprising:  
an electronically controllable drop ejection device *comprising a jetting device* in fluid communication with an electrochemical cell, the jetting device configured for outputting *a measured stream of liquid droplets* of a chemical composition capable of oxidative reaction into the electrochemical cell.  
(Emphasis added).

Claim 27 recites:

An electrochemical system comprising:  
an electrochemical cell capable of sustaining at least one oxidation reaction process; and  
a fuel supply apparatus delivering a composition containing at least one compound capable of oxidative reaction into the electrochemical cell, the fuel supply apparatus comprising at least one electronically controllable drop ejection device and at least one fluid storage chamber,  
*wherein said electronically controllable drop ejection device comprises a jetting device configured for outputting a measured stream of liquid droplets of said compound capable of oxidative reaction into the electrochemical cell.*  
(Emphasis added).

Applicant notes that claims 1 and 27 both recite a "jetting device" for outputting "a measured stream of liquid droplets." (Emphasis added).

In contrast to claims 1 and 27 and the recited "jetting device," Kindler teaches an "Aerosol Feed Direct Methanol Fuel Cell." (Kindler, title) (emphasis added). Thus, rather than teaching or suggesting the claimed "jetting device" or "measured stream of liquid droplets," Kindler only teaches aerosol generators for generating an aerosol in a fuel cell. (Kindler, col. 2, lines 10-65).

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At the heart of this rejection is the fundamental difference between a "jetting device," as recited in Applicant's claims, and an aerosol generator, as taught by Kindler. As the recent Office Action notes, examples of aerosol generators including aerosol cans such as cooking spray, insect repellent, etc. (Action, p. 13).

In contrast, examples of a jetting device include the jets of an inkjet printer. (Applicant's specification, p. 15, lines 25-31). In fact, in at least one embodiment, Applicant's specification explains that an exemplary "jetting device" is an "electronically controllable drop ejection device 150 [that] is generally configured and functions in a manner similar to an inkjet device." (Applicant's specification, paragraph 0062, as published with Pub. No. 20050008932).

Given these diverse examples, it is absolutely clear that an aerosol generator is a different device in both function and result than is a jetting device. If this were not so, if there were no distinction between jets and aerosols, we would have ink-aerosol printers. This absurd idea highlights the unreasonableness of the position taken by the recent Office Action.

In a misguided and overzealous attempt to reject the Applicant's claims, the Examiner is unreasonably attempting to erase or ignore the distinction between an aerosol generator, as taught in the cited prior art, and a jetting device, as recited in Applicant's claims. While this may be an interesting academic exercise in the world of patent examination, it would be nonsense to one of skill in the art who would clearly and absolutely understand the difference between an aerosol generator and a jetting device. It is improper and unfair to the Applicant for the Examiner to unreasonably ignore the real-world context in which terms of art are used by those of ordinary skill in that art. *Envirotech Corp. v. Al George, Inc.*, 730 F.2d 753, 759, 221 U.S.P.Q. 473 (Fed. Cir. 1984). This, however, is precisely the basis for the rejection of Applicant's claims.

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The recent Office Action states that “[i]t is unclear to the examiner how an aerosol is not a ‘measured stream of liquid droplets.’” (Action, p. 13). Applicant responds by pointing out that a jetting device and the resulting stream of liquid droplets can be used, as noted above, to print high-resolution images in, for example, an inkjet printer. Is the Examiner suggesting that such printing can be performed with an aerosol can? (Action, p. 13). Of course an aerosol is not a jet or “measured stream of liquid droplets” with, for example, the precision required for high resolution printing.

A “stream” is defined as “an unbroken flow (as of gas or particles of matter)” (<http://www.m-w.com/cgi-bin/dictionary>). Thus, a “stream” is not a diffuse cloud of suspended particles, like an aerosol. Similarly, a “jet” is defined as “a usually forceful stream of fluid (as water or gas) discharged from a narrow opening or a nozzle ... b : a nozzle for a jet of fluid.” (*Id.*). Consistent with these definitions and as indicated above, the term “jetting device” has a very specific meaning as a term of art that would be clear to one of ordinary skill. As evidenced by Applicant’s own specification in which a “jetting device” is defined as a device that emits a stream or jet of droplets. (Applicant’s specification, p. 15, lines 25-31). A jetting device can direct the stream at a particular target. (Applicant’s specification, Fig. 8).

An aerosol is defined as “a suspension of fine solid or liquid particles in gas.” (Merriam-Webster’s Online Dictionary, <http://www.m-w.com>). (Emphasis added). Additionally, Kindler describes an aerosol as “liquid fuel droplets suspended in a gas.” (Kindler, abstract). Clearly, a “suspension” refers to the state of a substance when its particles are mixed with, i.e. “suspended” in, but undissolved in a fluid or solid. (<http://www.m-w.com/cgi-bin/dictionary>). Thus, the term “suspension” clearly implies that

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the particles or droplets of an aerosol are spatially dispersed, as in a cloud, not organized into a jet or stream as would be produced by a jetting device.

While a stream or jet does include liquid droplets moving through air, the droplets of a jet are clearly not *in a suspension* in the air. If they were "suspended" as in a suspension, the jet or stream would never reach its target. (Applicant's specification, Fig. 8). A jet is clearly not an aerosol. One of skill in the art would clearly understand the difference between a jet or stream and an aerosol and would certainly not confuse the two. Consequently, it is clearly unreasonable to disregard the clear distinction between a jetting device that produces a jet or stream of liquid droplets directed at a particular target and an aerosol generator that produces a cloud of particles in a suspension.

Thus, Kindler does not teach or suggest the claimed "jetting device configured for outputting a measured stream of liquid droplets" to an electrochemical cell. "A claim is anticipated [under 35 U.S.C. § 102] only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). See M.P.E.P. § 2131. For at least these reasons, the rejection based on Kindler of claims 1 and 27, and their respective dependent claims, should not be sustained.

Additionally, various dependent claims of the application recite further subject matter that is clearly patentable over the cited prior art. Specific, non-exclusive examples follow.

Claim 6 recites "an admixer in fluid communication with the drop ejection device, the admixer tank configured to receive the chemical composition capable of oxidative reaction and at least one other additional material." Claims 37 and 47 recite similar subject matter. In contrast, as demonstrated above, Kindler does not teach or suggest the claimed "drop ejection

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device. Consequently, Kindler cannot teach or suggest the claimed admixer in communication with an electronically controllable drop ejection device, as recited in claim 6. For at least this additional reason, the rejection of claims 6, 37 and 47 should not be sustained.

Claim 8 recites "wherein the nozzle member directs ejection of chemical composition capable of oxidative reaction into a *liquid* fluid stream, the fluid stream being conveyed onto the anode of the electrochemical cell." (Emphasis added). In contrast, as demonstrated above, Kindler teaches the delivery of an aerosol, not a liquid fluid stream, to an electrochemical cell. Consequently, Kindler clearly fails to teach or suggest the subject matter of claim 8. For at least this additional reason, the rejection of claim 8 should not be sustained.

Claim 10 recites "a first electronically controllable drop ejection device is in fluid communication with a first composition capable of oxidative reaction and a second electronically controllable drop ejection device is in fluid communication with at least one second composition capable of admixture with the first chemical composition in a manner which facilitates the oxidative reaction." As demonstrated above, Kindler fails to teach or suggest this subject matter. For at least this additional reason, the rejection of claim 10 should not be sustained.

Claim 31 recites "wherein the composition containing at least one chemical component capable of undergoing oxidative reaction is contained in a first fluid storage chamber and wherein a second fluid storage chamber contains at least one compound which is complementary to the oxidative process occurring in the electrochemical cell." Claim 50 recites similar subject matter. In this regard, the recent Office Action refers to Kindler at col. 5, lines 51-54 and Fig. 1, element 26. (Action of 7/30/07, p. 8). However, both of these

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portions of Kindler refer only to a single "bottled oxygen supply." Neither citation teaches or suggests the claimed first and second fluid storage chambers or the different materials stored respectively therein. For at least this additional reason, the rejection of claims 31 and 50 should not be sustained.

Claims 3, 4, 33, 34, 38, 39, 43, 44, 46, 48-50, 86 and 91 were rejected under 35 U.S.C. § 103(a) over the combined teachings of Kindler and U.S. Patent App. Pub. No. 2002/0172851 to Corey et al. ("Corey"). Applicant notes that claim 47 was apparently intended to be covered by this rejection, even though not listed in the rejection heading. For at least the following reasons, this rejection should not be sustained.

Independent claim 43 recites:

A power generator comprising:  
an electrochemical cell having at least one reactive surface;  
*an electronically controllable jetting device supplying a fuel to the at least one reactive surface in the electrochemical cell;* and  
a recirculating circuit configured to convey a portion of at least one chemical byproduct produced in the electrochemical cell into reintegrative contact with the fuel.  
(Emphasis added).

Independent claim 48 recites:

A device comprising: a storage chamber containing a fuel;  
an electrochemical cell associated with the fuel storage chamber;  
*an electronically controllable jetting device for delivering discrete quantities of fuel from the storage chamber to the electrochemical cell;*  
a recirculation circuit transporting at least a portion of a byproduct material produced in the electrochemical cell into contact with the fuel delivered from the storage chamber; and  
a power consuming device powered by the electrochemical cell.  
(Emphasis added).

As demonstrated above, Kindler fails to teach or suggest the jetting device in connection with an electrochemical cell as recited in claims 43 and 48. The teachings of Corey do not remedy this deficiency, and Corey was cited by the Office Action for other

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reasons. (Action, p. 6). Consequently, the claimed jetting device in combination with an electrochemical cell, as recited in claims 43 and 48, is outside the scope and content of the cited prior art.

Under the analysis required by *Graham v. John Deere*, 383 U.S. 1 (1966) to support a rejection under § 103, the scope and content of the prior art must first be determined, followed by an assessment of the differences between the prior art and the claim at issue in view of the ordinary skill in the art. In the present case, the scope and content of the prior art, as evidenced by Kindler and Corey, did not include the claimed jetting device in combination with an electrochemical cell, as recited in claims 43 and 48. This subject matter is entirely outside the scope and content of the cited prior art. Moreover, as noted above, the presently claimed subject matter, including a jetting device, provide advantages as far as the precise deliver of fuel that were not recognized or available in the cited prior art. This makes the differences between the cited prior art and the claimed subject matter substantial. Consequently, the cited prior art will not support a rejection of claims 43 and 48 under 35 U.S.C. § 103 and *Graham*.

Additionally, various dependent claims of the application recite further subject matter that is clearly patentable over the cited prior art. Specific, non-exclusive examples follow.

Claim 3 recites:

a channel for removing a byproduct produced by the oxidative reaction from the electrochemical cell, the channel communicating with the electronically controllable drop ejection device, wherein the electronically controllable drop ejection device introduces the reaction byproduct into contact with the chemical composition capable of oxidative reaction in a stoichiometric relationship appropriate for function of the electrochemical cell.



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Claims 13, 33 and 38 recite similar subject matter. As demonstrated above, Kindler and Corey, taken together, fail to teach or suggest an “electronically controllable drop ejection device, wherein the electronically controllable drop ejection device introduces the reaction byproduct into contact with the chemical composition capable of oxidative reaction in a stoichiometric relationship appropriate for function of the electrochemical cell.” This subject matter is entirely outside the scope and content of the cited prior art. For at least this additional reason, the rejection of claim 3 should not be sustained.

Claim 4 depends from claim 3 and recites “wherein the drop ejection device is configured to affect proportionate delivery of the byproduct of oxidative reaction and the chemical composition capable of oxidative reaction into contact with the electrochemical cell.” Kindler and Corey do not teach or suggest this subject matter. For at least this additional reason, the rejection of claim 4 should not be sustained.

Claims 14-18, 41 and 42 were rejected as unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Kindler and U.S. Patent No. 5,746,985 to Takahashi (“Takahashi”). This rejection should not be sustained for at least the same reasons given above with respect to claims 1, 27 and 43 and for the following additional reasons.

Additionally, claim 14 recites “wherein the electronically controllable drop ejection device comprises a resistor surface having at least one catalytic material positioned thereon, the catalytic material reactive with a component in the chemical composition capable of oxidative reaction to effect at least partial catalytic reforming of the component of the chemical composition.” Claims 16 and 41 recite similar subject matter. Applicant notes that the resistor surface with the catalytic material is recited in the claims as being in the drop

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ejection device. Emphasizing this point, claim 15 further recites “wherein catalytic reforming occurs prior to exit from the drop ejection device.”

The Office Action acknowledges that Kindler fails to teach or suggest the subject matter of claim 14 and so cites to Takahashi. (Action, p. 7). Takahashi teaches “a heating resistor disposed inside a *reforming reactor*.” (Takahashi, col. 2, lines 63-64) (emphasis added). Takahashi further teaches that the heating resistor can be embedded in a catalyst. (Takahashi, col. 3, lines 3-5). However, Takahashi does not teach or suggest such a reactor disposed in a drop ejection device as claimed. Consequently, the combination of Takahashi and Kindler fails to teach or suggest all the features of claims 14-17, 41 and 42.

Under the analysis required by *Graham v. John Deere*, 383 U.S. 1 (1966) to support a rejection under § 103, the scope and content of the prior art must first be determined, followed by an assessment of the differences between the prior art and the claim at issue in view of the ordinary skill in the art. In the present case, the scope and content of the prior art, as evidenced by Kindler and Takahashi, did not include the claimed “resistor surface having at least one catalytic material positioned thereon” in a jetting device. The existence and advantages of this arrangement are wholly outside the scope and content of the cited prior art. Therefore, Kindler and Takahashi cannot support a rejection of claim 14, 16 and 41 under 35 U.S.C. § 103(a) and *Graham*.

Claim 45 was rejected under 35 U.S.C. § 103(a) over the combined teachings of Kindler, Corey and Takahashi. This rejection should not be sustained for at least the same reasons given above.

Specifically, claim 45 recites “wherein the jetting device further comprises at least one resistor surface, the resistor surface having at least one catalytic material positioned thereon,

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the catalytic material reactive with at least one component of the fuel to initiate at least partial catalytic reforming of at least one component of the fuel prior to entry into the electrochemical cell.” In contrast, as explained above, the cited prior art fails to teach or suggest the claimed jetting device.

Moreover, the cited prior art fails to teach or suggest the claimed resistor surface in such a jetting device “the resistor surface having at least one catalytic material positioned thereon, the catalytic material reactive with at least one component of the fuel to initiate at least partial catalytic reforming of at least one component of the fuel prior to entry into the electrochemical cell.” This subject matter is entirely outside the scope and content of the cited prior art.

For at least these reasons, the rejection of claim 45 should not be sustained.

Claims 73-75 and 78-80 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Kindler and U.S. Patent No. 6,372,483 to Schleifer et al. (“Schleifer”). This rejection should not be sustained for at least the same reasons given above with respect to the various independent claims and for the following additional reasons.

Claim 73 recites “wherein said drop ejection device comprises an inkjet drop ejection device.” The Office has conceded that Kindler fails to teach or suggest this subject matter. (Action of 2/9/07, p. 5). Consequently, the Action cites to Schleifer, which mentions an inkjet drop ejection device, and proposes to combine the teachings of Kindler and Schleifer in this regard. (*Id.*).

This proposed combination ignores the facts that Kindler calls for an aerosol generator, as demonstrated above, and an inkjet drop ejection device is *not* an aerosol generator. Consequently, it is entirely unclear how one of skill in the art would have been

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lead to combine the teachings of Kindler and Schleifer as proposed in the recent Office Action. The same is true of claim 74 which recites "a thermal drop ejection device," and claim 75 which recites "a piezoelectric drop ejection device." Claims 78-80, 84, 85, 89 and 90 also recite parallel subject matter.

A large number of devices may exist in the prior art where, if the prior art is ignored as to its content, purpose, mode of operation and general context, the several elements claimed by the Applicant, if taken individually, may be disclosed. However, the important thing to recognize is that the reason for combining these elements in any way to meet Applicant's claims only becomes obvious, if at all, when considered from hindsight in the light of the application disclosure. The Federal Circuit has stressed that the "decisionmaker must step backward in time and into the shoes worn by a person having ordinary skill in the art when the invention was unknown and just before it was made." *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1566 (Fed. Cir. 1987). To do otherwise would be to apply hindsight reconstruction, which has been strongly discouraged by the Federal Circuit. *Id.* at 1568. Respectfully, "it is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious"; *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1141, 227 USPQ 543, 550 (Fed. Cir. 1985); *W.L. Gore & Assocs. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984)

"To imbue one of ordinary skill in the art with knowledge of the invention in suit, when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher." *W.L. Gore & Assoc. v. Garlock, Inc.*, 721 F.2d 1540, 1553 (Fed. Cir. 1983).

Therefore, without some reason in the references to combine the cited prior art teachings, with some rational underpinnings for such a reason, the Examiner's conclusory

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statements in support of the alleged combination fail to establish a prima facie case for obviousness. See, *KSR International Co. v. Teleflex Inc.*, No. 04-1350, 550 U.S. \_\_\_\_ (2007) (obviousness determination requires looking at “whether there was an apparent reason to combine the known elements in the fashion claimed....,” citing *In re Kahn*, 441 F.3d 977, 988 (CA Fed. 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness,” *KSR* at 14).

For at least these additional reasons, the rejection of claims 73-75, 78-80, 84, 85, 89, 90 should not be sustained.

Claims 83-85 and 88-90 were rejected under 35 U.S.C. § 103(a) over the combined teachings of Kindler, Corey and Scheifler. This rejection should not be sustained for at least the reasons given herein. As demonstrated above, Kindler and Corey do not teach or suggest a jetting device in connection with an electrochemical cell as disclosed and claimed by the Applicant. Scheifler does not in any way remedy this deficiency. Therefore, this rejection of claims 83-85 and 88-90 should not be sustained.

The recent Office Action rejected claims 77 and 82 as unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Kindler, U.S. Patent App. Pub. No. 2003/0044666 to Fan et al. and U.S. Patent No. 5,789,585 to Lee et al. (“Lee”). This rejection should not be sustained for at least the same reasons given above with respect to the various independent claims

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The recent Office Action rejected claims 87 and 92 as unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Kindler, Corey and Lee. This rejection should not be sustained for at least the same reasons given above with respect to the various independent claims

Conclusion:

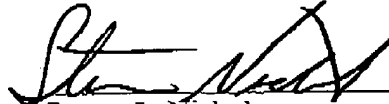
In view of the foregoing arguments, all claims are believed to be in condition for allowance over the prior art of record. Therefore, this response is believed to be a complete response to the Office Action. However, Applicants reserve the right to set forth further arguments supporting the patentability of their claims, including the separate patentability of the dependent claims not explicitly addressed herein, in future papers. Further, for any instances in which the Examiner took Official Notice in the Office Action, Applicants expressly do not acquiesce to the taking of Official Notice, and respectfully request that the Examiner provide an affidavit to support the Official Notice taken in the next Office Action, as required by 37 CFR 1.104(d)(2) and MPEP § 2144.03.

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If the Examiner has any comments or suggestions which could place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the number listed below.

Respectfully submitted,



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## CERTIFICATE OF TRANSMISSION

I hereby certify that this correspondence is being transmitted to the Patent and Trademark Office facsimile number 571-273-8300 on April 10, 2008. Number of Pages: 31



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